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In this paper, we use the concept of cognitive dissonance to understand how firms balance cognition and behavior within the framework of their environmental strategies. By understanding the paths for dissonance reduction, the motives for choosing one path over another, and the factors influencing the choice of a particular path by a business firm, we develop propositions regarding how firms make strategic choices with regard to environmental behavior.

Green strategies are characterized by an inherent contradiction. A critical aspect of green strategies is reducing the impact of an organization and its products on the environment, often moving beyond the notion of simple pollution control (Hart 1997). But, at the same time, firms are beholden to their stockholders to increase stock value, not only through increasing margins, but also by encouraging consumption of their products (Estes 1996), which inevitably increases the firm's environmental impact. Cognitive dissonance theory argues that, in such cases, where there is a contradiction between behavior and cognition, parties can attempt to restore cognitive consistency in one of three ways (Festinger 1957). First, individuals can change the importance of the cognition. For example, at the individual level, an employee asked to pollute by his or her organization may find this inconsistent with an interest in environmental protection. However, he or she might reduce the importance of this interest in relation to non-dissonant cognitions. A second option can be the change of an existing cognition or the addition of a new cognition in order to make cognition more consistent with behavior. For example, in the case of the polluting employee, he or she might introduce a 'new way' of thinking about pollution and production, a way that reconciles or minimizes the contradiction between the cognition and the behavior that he or she is facing. The last option can be to actually change the behavior so that it is more in alignment with the cognition. In the case of our polluting employee, this individual would find a way to stop polluting.

While cognitive dissonance is primarily thought of as an individual level phenomenon, it can also be considered as a group or organizational level phenomenon. In this paper, we use the concept of cognitive dissonance to understand how firms balance cognition and behavior within the framework of their environmental strategies. By understanding the paths for dissonance reduction, the motives for choosing one path over another, and the factors influencing the choice of a particular path by a business firm, we develop propositions regarding how firms make strategic choices with regard to environmental behavior.

The remainder of this paper proceeds as follows. First, we briefly present the notion of cognitive dissonance, as it was developed in its original context – the field of psychology – and we discuss why it can be applied at the organizational level and in particular in the way that firms deal with the inherent contradiction of their environmental strategies. Second, drawing, from cognitive dissonance and issue life cycle theory, we develop a theoretical framework, which helps with the understanding of cognitive dissonance due to environmental concerns at the business firm level. Third, we use this framework in explaining the relatively new trend of manufacturing firms towards environmental services, as a way to reduce the inherent cognitive dissonance of their environmental strategies. The paper concludes with a discussion of its limitations, and implications for further research and managerial practice.

Cognitive Dissonance

The basic notion of cognitive dissonance, introduced by Leon Festinger in 1957, basically says that, if a person holds two cognitions that are psychologically inconsistent, or if one's behavior is inconsistent with a cognition, s/he experiences dissonance, a negative drive state. Because this is unpleasant for the individual to experience, s/he will strive to reduce this dissonance (Festinger, 1957) In this paper, we will be focusing on the dissonance caused by conflict between a cognition and a behavior, as some suggest that this is when dissonance is the greatest and the clearest (Masssaro, 1997). A modification of this theory suggests that the greatest dissonance occurs when the behavior contradicts with an individual's "self concept" (Masssaro 1997). Massaro (1997, 131) goes on to argue that there are three things in particular that cause diasonance.

"Most individual strive for three things: (a) to preserve a consistent, stable, predictable sense of self, (b) to preserve a competent sense of self and (c) to preserve a morally good sense of self. Or, in shorthand terms, what leads me to perform dissonance-reduction behavior is my having some something which either astonishes me, makes me feel stupid, or makes me feel guilty."

There are three ways individuals can reduce dissonance between a conflicting cognition and behavior have been identified. First, individuals can reduce the importance of the dissonant cognition. Second, they can change the dissonant cognition or add new information to this cognition to make it more consistent with behavior. Lastly, if they cannot change the cognition, they can change the behavior to be more consistent with the cognition.

While cognitive dissonance is primarily thought of as an individual level phenomenon, as discussed by Bacharach, et al. (1996), by thinking of dissonance

reduction as a shared logic of action, it can also be considered as a group level variable. Many groups have mutually shared fields and mental models (i.e. subcultures) as members undergo similar socializations processes and shared experiences. Bacharach et al explains (1996,478)

> "The literature on the organizational mind and collective cognitive ordering suggests that these collectives, just like the social actors they comprise, base their actions on a common set of means-ends logics. Thus to the degree that all organizational members are members of organizational subgroups (e.g. labor, management) with their own unique means-ends calculations, we can also speak of the logic of action as a group phenomenon."

In the case of environmental strategy development, we can focus on environmental management staff as the key decision-makers with regard to environmental performance, and assume that they have a *shared* logic of action. Our basic premise is that environmental management teams in manufacturing firms have the potential to experience dissonance and will be motivated to reduce this dissonance, by choosing one of the above dissonance-reducing options. Some examples of individuals, and organizations experiencing cognitive dissonance because of environmental issues can illustrate this point further.

The first way to reduce dissonance is to reduce the importance of a dissonant cognition, in comparison to non-dissonant cognitions. This is related to the "Induced-Compliance" paradigm (originally called forced compliance) (Harmon-Jones and Mills 1999). As discussed earlier, dissonance is aroused whenever a person engages in an unpleasant activity that is dissonant with their beliefs in order to obtain a desirable outcome. The Induced-Compliance Paradigm suggests that inducements to engage in such an activity, i.e. the more desirable the outcome, the greater is the likely hood that cognitions justifying the behavior will increase in importance in comparison to the dissonant cognition, as well as in numbers, in turn lowering the dissonance.

At the individual level, for example, an employee asked to pollute by an employer may find this inconsistent with an interest in environmental production. But s/he might reduce the importance of this interest as compared to, for example, the importance of keeping a job. What the employee did in this case was that she reduced the dissonance she experienced by reducing the importance of the particular cognition that caused dissonance because of conflict with behavior. A similar situation, at the organizational level, can be seen in situations in which environmental strategies are tempered under situations of economic concern (Shelton 1994; Rothenberg 1995). For example, a business firm faced with the high cost of investing in anti-polluting facilities has to weigh its environmental beliefs versus the potential impact that such an investment will have on the firm's financial performance, and they may downplay the need for the particular investment. In other words, it will change the importance of their cognition on the matter.

A second option, facing both the employee and the firm, is to change an existing or add a new cognition in order to make the cognition more consistent with the behavior. For example, the polluting employee above might opt to believe that the activity is not an actual threat to the environment, changing the dissonant cognition, in order to decrease the cognition's discrepancy with the behavior. At the firm level, as the scientific evidence for environmental degradation becomes harder to discount, many proactive firms have embraced the ideology of "sustainable development" as a way to reduce dissonance (World Commission on Environment and Development 1987). As discussed Geertz (1973), ideologies emerge when perceptions of reality expand beyond the existing ideological structure, which he refers to as "cultural strain." Environmental ideologies may emerge out of an inability to understand the mismatch between undesirable environmental damage and human action. As discussed by Merchant (1980), environmental ideologies have been used to provide such explanations for decades. Sustainable development provides such an explanation as well. Sustainable development legitimates development and economic growth, while also legitimating a concern for environmental protection, recognizing that the current pattern of growth is not sustainable.

Another way that cognitions can be altered is through the distortion of information related to this cognition. A specific line of research in this vein relates to the process of selective exposure, which focuses on the extent to which individuals will actively "search" for information that is inconsistent with beliefs and behaviors. Interestingly, research suggests that selective exposure to dissonant information has a curvilinear relationship with the level of dissonance. Selective exposure filters out dissonant information, but when the dissonance gets too large, the blocking off of information will reverse itself, and the initial decision is revised with the external evidence (Gilad, Kaish et al. 1987). This would suggest that at lower levels of dissonance, firms might choose to gather and rely on environmental science that minimizes the environmental impact of their activities. This phenomenon has been observed in the automobile industry, were industry scientists, although striving for objectivity, tend to engage primarily with climate skeptics (Rothenberg and Levy 1999).

The last option open to an individual or a firm, faced with such a dissonance due to environmental issues, is to actually change the dissonant behavior, so that it is more in alignment with the cognition. In the case of our polluting employee, this individual would find a way to stop polluting, or quit. At the organizational level, this has also been an option for many firms, and quite often firms change their behavior, such as undertaking high investments in anti-polluting equipment, despite the financial consequences.

Given these strategic options, how can we understand which path to dissonance reduction a firm will take? There are a number of theories that address this question. An important factor is the resistance to change of a cognition or behavior. Research suggests that the likely hood that a particular cognition or behavior will change to reduce dissonance is determined by the resistance to change of the cognition. Behavioral cognitions with the least resistance will be the first to be changed (Festinger 1957; Gilad, Kaish et al. 1987). This resistance to change of a behavioral cognitive element depends, in part, on the extent of the loss that must be endured and the satisfaction obtained from the behavior (Harmon-Jones and Mills 1999). Alternately, if a behavior is associated with something satisfying, it could also lead to resistance (Festinger 1957).

In the following section, we develop a theoretical framework to consider this question, and identify a number of propositions concerning cognitive dissonance and environmental strategies. This same framework we shall use in a later section to discuss and better understand the ultimate cognitive dissonance manufacturing firms face, when they realize that no matter how 'green' they become, they still have to produce and sell more products, something, which is most often an inherent contradiction with environmental protection.

A Theoretical Framework on Environmental Cognitive Dissonance

Drawing on the cognitive dissonance literature, what has been said above about how it could apply to the environmental strategies of business firms, and the issue life cycle literature, a theoretical framework that deals with the cognitive dissonance associated with environmental strategies is presented in figure 1. This framework identifies and discussed the impact of two factors, which can influence the degree of dissonance experienced by a firm, and the firm's choice of a dissonance-reduction option. These factors are financial performance and issue life cycle phase.

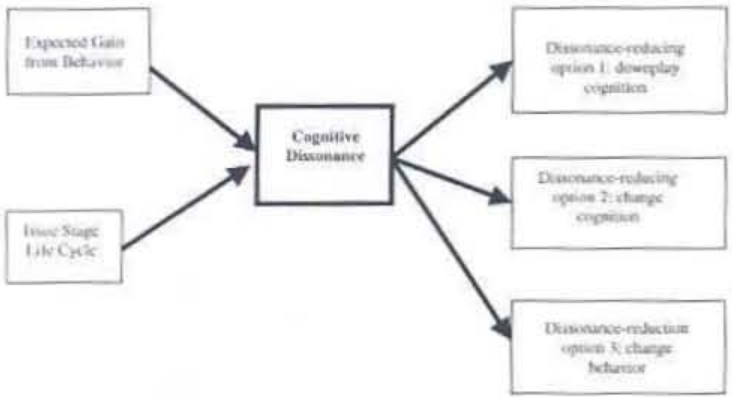

Figure 1: Framework for Dissonance Reduction in Environmental Strategies

The theoretical model developed here has five parts. These parts are financial consequences of a behavior the stage of issue life cycle in which the firm is, and the three dissonance-reduction strategies at its disposal. With regard to the first part of the model, of interest here is the financial performance expected, as a result of the firm's environmental actions. Second, the issue life cycle phase refers to the level of commitment that the particular firm has concerning a particular issue, in this case, environmental stewardship. In other words, is the company just discovering environmentalism, or has the company long incorporated environmental principles in its every-day operations? Finally, the last three elements of the framework refer to the possible dissonance-reduction strategies available to firms facing cognitive dissonance concerning environmentalism. The first dissonance-reduction strategy requires the 'downplay' of the firm's environmental beliefs, so that their conflict with the firm's environmental behavior is reduced. The second requires the change of the firm's environmental beliefs. The third requires a change in the firm's behavior towards environmental matters, so that this behavior becomes more in line with the firm's values and beliefs.

Dissonance-Reducing Strategy Selection

Before we enter into how firms can reduce dissonance, we must first discuss the conditions under which dissonance may occur at a more macro level. At the level of the organization, cognitive dissonance can arise from a conflict between the organization's culture (values and beliefs) and behavior. As we discussed earlier, in this particular care, one would look at the level congruity between the environmental management team and their "shared logics of action," or subculture and its behavior.

Using Schein's definition of culture as shared assumptions (Schein, 1992), we can illustrate this form of dissonance. For a proactive firm, a shared assumption might be that this firm cares about the environment and its impact on it. At the same time, the firm is producing a new disposable product that has a shorter product life cycle than its original counterpart. This will lead to greater energy use, solid waste, water pollution etc., as well as contribute to the disposable mindset of its consumers. Under this situation, there is a conflict between the core assumptions of the organization and its behavior. This conflict at an organizational level can be as uncomfortable as it is at the individual level, as it can cause low moral among employees, inefficient and ineffective implementation of strategies, and increased administrative costs to ensure compliance with non-legitimate behavior. Therefore, in a similar manner to individuals with cognitive dissonance, organizations with dissonance will try to reduce it by engaging in dissonance-reduction activities:

Proposition 1: Those business firms experiencing dissonance concerning its environmental behavior will engage in dissonance-reducing action.

Financial Performance: There are numerous aspects of a firm's culture and identity, as well as numerous cognitions, or "shared assumptions." One of the most dominant cognitions in most firms is the idea that the firm should make a profit. What if a behavior is consistent with this cognition, but conflicts with environmental cognitions? As discussed earlier, the "Induced-Compliance" paradigm suggests that inducements to engage in such an activity, i.e. the more desirable the outcome, the greater is the likely hood that cognitions justifying the behavior will increase in importance and in numbers, in turn lowering the dissonance (Harmon-Jones and Mills 1999). At the organizational level, if we substitute the desirability of the outcome, with the expected financial return to the firm becauae of a particular environmental strategy, we can say that the greater the expected financial return from a particular environmental strategy, the more likely that the firm will choose options 1 or 2, and either lower the importance or change the cognition, over option 3 as its dissonance-reduction strategy.

Proposition 2: the greater the expected financial return of a dissonant environmental behavior, the greater the likely hood that the firm will choose options 1, or 2 over option 3, as its dissonance-reduction strategy.

Issue Life Cycle Phase: According to social issue life cycle theory, social issues evolve through a predictable trajectory (Downs 1972; Ackerman 1975; Mahon and Waddock 1992; Bigelow and Fahey 1993). And, although the number of periods or phases through which an issue evolves varies from three stages (Ackerman, 1975) to four stages (Mahon and Waddock, 1992), it is generally agreed upon that:

> "social issues progress from a period in which the issue was unthought of or unthinkable, to a period of increasing awareness and expectations for action, and then to a period where new standards for dealing with the issue become ingrained in the normal functioning of the company" (Nasi, Nasi et al. 1997, 298)

In this paper, following the version of an issue life cycle theory developed by Ackerman (1975), we argue that the phase in which a company is in will influence its choice of dissonance-reduction strategy. But more specifically, Ackerman's theory, applied to environmental issues, would identify three phases through which business organizations increase their familiarity with the issue. These phases are policy, learning, and commitment.

These phases relate to the organizational approach to environmental strategy, and the degree to which environmental concerns are embedded into the organizational structure and culture. How might an organizational response to dissonance change as an organization enters different stages of the life-cycle? During the first phase, policy, environmentalism arises as a top management concern. The president or the CEO of the firm identifies environmentalism as a social issue that needs more attention. So, this concern with environmentalism gets stated in the annual report of the corporation, a general policy on the matter is developed, but very little else is done, as the rest of the organization does not know how to deal with the issue. There is no systematic analysis followed by little or no action, as the firm's policy is quite general and measurement of tangible performance is practically impossible. In addition, line and staff personnel do not have the skills, or the background to deal with environmental matters, and no incentives for implementing the firm's environmental policy have been worked into the reward systems used.

During this phase, given that the firm is relatively new to environmentalism, the staff of the organization is not familiar enough with the issue of environmentalism to be able to change its cognition, and the systems, skills, and control mechanisms are not in place to facilitate changes in environmental behavior. In addition, this phase would involve the greatest resistance to change of the cognition. Research suggests that the likely hood that a particular cognition will change to reduce dissonance is determined by the resistance to change of the cognition (Gilad, Kaish et al. 1987). In this first phase of the issue life-cycle, long standing cultural assumptions that focus on profit maximization and suggest a conflict between environmental conservation and the goal of profit maximization are still deeply routed in the organization and are extremely resistant to change, as are the behaviors associated with these cognitions.

As a result, options 2 and 3, are not readily attainable by the organization and the only course of action it has in dealing with this dissonance is to downplay the values and beliefs that have emerged and challenge its traditional environmental (or lack of) policy. In other words, option 1 is the only option available to a business firm at this stage. Therefore, proposition 3 follows,

Proposition 3: Firms, who are in the first phase of their environmental issue life cycle, will tend to choose option 1 – cognition downplay – as their dissonance-reduction strategy.

The second phase, Learning, is characterized by the addition to the corporate staff of a specialist (or specialists) who is given the responsibility of implementing the company's social policy. However, the specialist's job is initially very poorly defined, with no clear definition of his or her authority or responsibilities. The result is a great deal of friction between the specialist and the line managers, leaving the specialist to deal with all the organizational obstacles identified above. Changes in organizational behavior at this phase, therefore, are still difficult. At this phase, however, environmental staff members have enough knowledge of the environmental issues to add new cultural assumptions, or make changes to existing ones. Therefore, proposition 4 follows,

Proposition 4: Firms, who are in the second phase of their environmental issue life cycle, will tend to choose option 2 – change cognition – as their dissonance-reduction strategy.

During the third phase, Commitment, organizational responsiveness is integrated into ongoing business decisions and becomes the responsibility of line managers. As discussed by Schein, when focusing on cultural change, one often needs a crisis of some sort to separate the organization from it's past and "unfreeze" the organization (Schein 1992). Therefore, the transition from Phase II to Phase III is often traumatic and is the result of an externally or internally induced crisis. This crisis often makes the resistance of operating managers crumble and leads to their adoption of the new policies and behaviors. In addition, supplementary reporting and auditing practices aimed at social issues are often implemented, and performance evaluation criteria begin to include social issues. It is during this period of upheaval that resistance to changing old cognitions, embracing new ones, and the ultimate changing of behavior is most likely.

Proposition 5: Firms, who are in their third phase of their environmental issue life cycle, will tend to choose option 3 – behavior change – as their dissonance-reduction strategy.

The Trend Towards Environmental Services

While proactive firms can reduce dissonance through changing behavior, there is an inherit limit to this approach for most goods producing firms. Going back to our initial contradiction, there is, a kind of dissonance, which business firms, and especially traditional manufacturing firms, cannot escape. This kind of dissonance refers to the fact that no matter how environmentally friendly or non-polluting a manufacturing facility might be, the main purpose of the firm is to produce and sell

more of its products, an activity that is inherently in conflict with environmental principles.

For those firms that recognize this conflict, and are not likely to change cognitions given the discussion above, what is their alternative? In such situations, inventive firms have turned to providing services to help consumers "dematerialize." (Ottman 1999). A study by the Tellus Institute, for example, has found that in business-to-business markets, that firms such as Coro, DuPont, IBM, and Xerox, have turned to "servicizing" as an integral part of their environmental strategy (White, Stoughton et al. 1999). They state, services have the potential to "change the way products are made, used and disposed of – or...in some cases, supplant products altogether" (White, 1999:1).

One example of such a shift is the company "Waste Management," a firm that traditionally made its profits from the collection and processing of waste. In the Saturn manufacturing facility, profits are now dependant on their service to plant in terms of reducing and recycling plant wastes (Rothenberg 1995). This shift was hard for some Waste Management employees to make, as it required a redefinition of what the firm "produced." In a similar arrangement, material suppliers such as Gage, DuPont, and PPG are altering their basis of competitive advantage. In Chrysler manufacturing plants, paint suppliers are paid per vehicle rather than per volume of paint in order to encourage the reduction of paint use (Geffen and Rothenberg 1997). Gage is a supplier of chemicals, as well as a provider of services to reduce VOC emissions and solvent use. As recalled by the on-site environmental specialist from Gage, "When I was hired I was told 'your job is to put yourself out of business.'" Under this relationship, contacts are arranged so that profits are not 100% dependant on the quantity of material sold to plants. This arrangement is similar to the growing number of "Chemical Management" programs, in which chemical suppliers work with their customers to consolidate and reduce chemical use (Rothenberg 1995).

Another well-known example is Patagonia, who made a strategic decision to reduce growth, and increase service through product quality. In the 1992 Yvon Chouinard, president of Patagonia announced (Meadows 1992):

> "Last year we underwent an environmental audit to investigate the impact of the clothing we make . . . . To no one's surprise, the news is bad. Everything we make pollutes.... We are limiting Patagonia's growth . . . . We dropped 30% of our clothing line. . . . . Last fall you had a choice of five ski pants, now you may choose between two . . . . You will see fewer color and style choices throughout the catalog. The fewer styles we make, the more we can focus on quality. We think the future of clothing will be less is more, a few good clothes that will last a long time. We have never wanted to be the largest outdoor clothing company in the world, we have only wanted to be the best."

Going back to our propositions, what would cause firms to take such a shift in strategy, i.e. behavior? First, according to proposition 1, there would have to be some level of cognitive dissonance. As we discussed earlier, this dissonance, expressed most clearly by the quote from Chouinard, stems from the inherent conflict between sustainability and the increased production of material goods. Then, there are two conditions under which firms would be more likely to change behavior. First, the production of goods is not producing high economic returns. Second, that firms are in the third phase of their environmental issue life cycle.

For companies such as Gage and PPG firms were under pressure from their customers to provide this material reduction service. If they did not respond to these demands, there was a great likelihood that they would lose the account to more responsive suppliers. Therefore, the expected financial return from the dissonance behavior was low, increasing the likely hood that they would change this behavior. In the case of Patagonia, the firm was clearly in the third phase of this issue lifecycle, reducing resistance to environmental cognitions and, ultimately, changes in behavior.

Discussion and Conclusions

In this paper we outline a model that integrates at the popular theory of cognitive dissonance at the level of the individual with environmental strategy formulation and implementation. One of the contributions of dissonance theory in this arena is to help understand how firms react to conflicts between their environmental policies and beliefs and their behavior. In some situations, firms may choose to ignore dissonance cognitions. In others, they may alter cognitions to fir their behaviors, by gathering data more skeptical of environmental damage or by developing a new ideology that helps reconcile these conflicts. Finally, they may change their behaviors to be more consistent with their developing environmental conciseness. In this last area, the ultimate change in behavior is the move to dematerialization, which requires a redefinition of the ultimate product offered to consumers in terms of both material goods and service.

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